Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A281.9
Ag83E
Cop. 2

ERS-495

ECONOMIC POTENTIAL for CONVERTING WOODLAND and PASTURE to CROPLAND

LOWER MISSISSIPPI VALLEY AND SOUTHEAST

U. S. DEPT. OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
RECEIVED
MAY 17 1972
PROCUREMENT SECTION
CURRENT SERIAL RECORDS

ECONOMIC RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE

ABSTRACT

If there were a future need for it, 49 million acres of woodland and pasture in the lower Mississippi Valley and the Southeast could be profitably converted to cropland. Minimum crop prices that would be required to pay for the land conversion (as well as ordinary production costs) are given.

The supply of potential cropland would largely depend on the repayment time for the investment in land clearing. Interest charges of 5, 7, and 9 percent would have only a small effect on minimum prices, which would increase about 3.5 percent for each 1-point increase in interest rates. But minimum prices would increase to 155 percent of their original levels if the repayment time were shortened from infinity to 5 years. This increase would make land conversion less profitable.

The estimates in the report do not consider the effects on the market for crops, which could be drastic if no adjustments were made in the production of these crops in other areas.

Keywords: Land classification, cropland, land improvement, land reclamation, land improvement, pastures, forest, Southeastern Region.

CONTENTS

Page

SUMMARY.......... iv

INTRODUCTION.......... 1

AREAS STUDIED.......... 3

LAND CLASSIFICATION.......... 7

METHOD OF ANALYSIS.......... 8

CROPLAND FROM WOODLAND.......... 10

CROPLAND FROM PASTURELAND.......... 14

EFFECTS OF SELECTED INTEREST RATES ON PROFITABILITY OF DEVELOPING NEW CROPLAND.......... 16

EFFECTS OF REPAYMENT PERIOD ON PROFITABILITY OF DEVELOPING NEW CROPLAND.......... 16

APPENDIX: REPRESENTATIVE BUDGETS USED IN MINIMUM PRICE DETERMINATIONS.......... 20

Washington, D.C. 20250 January 1972

SUMMARY

In the lower Mississippi Valley and the Southeast, 49 million acres--37 million from woodland and 12 million from pasture--could profitably be converted to cropland at 1970 costs and product prices. "Profitably" means that crops grown on the cleared land would earn enough to pay a return on investment for clearing in addition to estimated crop production costs. The price for each crop necessary to produce this income is called the minimum price. If there were a future need for it, a total of 98.7 million acres in these regions could be converted.

Conversion of potential cropland would depend largely on the repayment time for the investment in land clearing. Interest charges of 5, 7, and 9 percent on the investment would have only a small effect on minimum prices, which would increase about 3.5 percent for each 1-point increase in interest rates. But minimum prices would increase to 155 percent of their original levels if the repayment time were shortened from infinity (no repayment of investment) to 5 years. Thus, the length of the repayment period would influence farmers in deciding whether new land should be converted to crop production. A 20-year repayment period would increase minimum prices relatively little (at most about 8 percent) compared with an infinite repayment period, but shorter repayment periods would cause considerable increase in minimum prices and would therefore make land conversion less profitable.

With this much new cropland, the quantity supplied of some crops would be drastically increased (especially rice and soybeans). The market could be disrupted unless offsetting shifts occurred in demand or in production of these crops in other areas. The increase in cropland could be much less than 49 million acres because of the price effects of additional crop production on new land development.

ECONOMIC POTENTIAL FOR CONVERTING WOODLAND AND PASTURE TO CROPLAND

Lower Mississippi Valley and Southeast

By

Bob Davis 1/

INTRODUCTION

The cropland acreage necessary for future agricultural purposes will depend upon relative growth rates of the population, technical innovation, and farm policies adopted by the Government. This report estimates the amount of new cropland that could be developed economically at alternative levels of product prices and amortization rates for selected U.S. cropland areas. The new cropland would come from land not now used for crop production but suitable for that purpose if cleared or converted from grass production.

The United States contains about 2.27 billion acres of land. Of this total, nearly 1.44 billion acres are non-Federal lands used for agriculture, according to the 1967 National Inventory of Soil and Water Conservation Needs (Conservation Needs Inventory) (table 1).2/ Cropland, however, is a small portion of total agricultural land. The Conservation Needs Inventory places cropland acreage at 437.6 million acres, or 19.3 percent of the total land in the Nation. An even smaller amount of land is used for crops. In 1969, 298.9 million acres were planted to 59 principal crops, 58.0 million acres were diverted from production under provisions of Government programs, and the remaining acreage was about evenly divided between idle land or soil improvement crops and cropland used only for pasture.3/

During 1958-68, cropland acreage declined about 2.5 percent, net, according to the Conservation Needs Inventory.4/ The term net is used because each year some land is added as other land is taken out of the cropland base. Cropland is taken for urban and other nonfarm uses, while other land is cleared and converted to cropland. In recent years, the

---

1/ The author was an Agricultural Economist, Farm Production Economics Division, Economic Research Service, when he wrote this report. He is now on the staff of East Texas State University, Commerce, Tex.

2/ U.S. Department of Agriculture, Basic Statistics--National Inventory of Soil and Water Conservation Needs, 1967, U.S. Dept. Agr. Statis. Bul. No. 461, 211 pp., Jan. 1971.

3/ See tables 643 and 747 in Agricultural Statistics, 1970, U.S. Dept. Agr., 1970.

4/ Census of Agriculture data show a 3.1-percent decline between 1959 and 1964.

Table 1.--Major uses of land, United States, 1967

Land use	Acreage	Percentage of total
	Mil. acres	Pct.
Cropland	437.6	19.3
Grassland, pasture, and range	481.9	21.3
Forest land	462.3	20.4
Other land	56.2	2.5
Total inventory land	1,438.0	63.5
Noninventory land	828.0	36.5
Total land area	2,266.0	100.0

Source: Tables 1 and 2 in Basic Statistics--National Inventory of Soil and Water Conservation Needs, 1967, U.S. Dept. Agr. Statis. Bul. No. 461, 211 pp., Jan. 1971.

rate of conversion of noncropland to cropland has slowed, probably because of Government regulations restricting use of new cropland on farms that participate in Government programs.[5]

The amount of land that could be profitably converted to cropland at 1970 prices and costs was determined as follows. First, areas chosen for analysis were limited to those where land had been converted to cropland in the past 5 years or so. Second, the land classification system employed in the Conservation Needs Inventory was used to account for differences in productivity of various lands due to locational and quality variations. Third, minimum product prices that would pay for development of relevant crop enterprises were computed in each production area for each kind of land. Minimum prices were based on estimated crop yields, production costs, and land conversion costs. Finally, the quantity of land available for conversion to cropland was computed from Conservation Needs Inventory data. Separate analyses were made for new cropland from woodland and from pastureland.

Although return over costs would justify bringing the estimated acreage of land into production, landowners might, for various reasons, choose to leave land in grass or trees. For example, landowners may have more profitable uses for their time and capital than clearing and draining land for crop production.

---

[5] For each acre of new cropland added to a farm, an acre must be added to the conserving base. Land in the conserving base is ordinarily not allowed to be used for crop production by farmers participating in Government programs. Hence, the effect of the regulation is to keep the amount of land eligible for crops constant even though new cropland has been added to the farm. Farmers have the right to appeal to the local Agricultural Stabilization and Conservation Committee to have their conserving base reduced, but each appeal is handled on an individual basis and may or may not be approved.

AREAS STUDIED

The areas chosen for analysis are taken from 14 major land resource areas delineated by the Soil Conservation Service, USDA, [6] because of their relative homogeneity in general soil and growing conditions (fig. 1). The resource areas are not so detailed in their common characteristics that their number is completely unmanageable, as would be the case with soil series, for example. Reasons for selecting the area under study are outlined below.

Most land west of the 100th meridian receives a limited amount of annual precipitation. The Pacific coast is an exception, but in almost all of the rest of this area, much of the acreage of the most common crop, wheat, is summer fallowed because of moisture limitations. Thus, the amount of new cropland developed would greatly depend upon availability of irrigation water. The amount of newly irrigated cropland is relatively small for this area, as shown in other studies.[7] The large acreage of federally owned noncropland also serves to limit cropland development in the West. All this area was removed from consideration.

East of the 100th meridian, consideration was primarily given to areas where substantial amounts of new cropland had been developed in the last 5 years. Most areas of the Corn Belt had already been developed, so that most noncropland acreage is not suitable for cropping. However, some areas of southern Illinois and Missouri contain substantial noncropland acreage suitable for cropping. The Lake States have large timber resources, but the growing season is short. Land cleared in those States goes to pasture rather than cropland, according to the Soil Conservation Service.[8]

The Northeast and the Southern Plains are not promising for cropland development. Nonfarm demands on land in the Northeast, coupled with small holdings and generally stony soils, seem to preclude extensive cropland development. In addition, the climate favors livestock enterprises and forestry rather than cropping. Parts of the Southern Plains have been changing from crop to livestock production and cropland has been converted to pasture (table 2). One large cropland area, the Texas High Plains, has been faced with declining water tables, and will very likely have large acreages with diminished potential for crops. Although large areas of the Southern Plains are planted to crops, demand for grassland and other uses will probably prevent substantial amounts of new land from going to cropland.

---

[6] Austin, Morris E., Land Resource Regions and Major Land Resource Areas of the United States, U.S. Dept. Agr., Agr. Handb. No. 296, Dec. 1965.

[7] See text and table 11 of Committee Print No. 12, Select Committee on National Water Resources, U.S. Senate, 86th Cong., 1st sess., U.S. Govt. Pringint Off., Wash. D.C., 1960. Also tables 4-4-2, 4-4-3, and 4-4-4 in The Nation's Water Resources (Parts 1-7), U.S. Water Resources Council, U.S. Govt. Printing Off., Washington, D.C ., 1968, and table 6 in G.W. Dean and others, Projections of California Agriculture to 1980 and 2000, Calif. Agr. Expt. Sta., Davis, Bul. No. 847, 1970.

[8] Personal communications to the author from State Conservationists in those States confirm this land use pattern.

FIGURE 1. LAND RESOURCE AREAS IN THE STUDY REGIONS

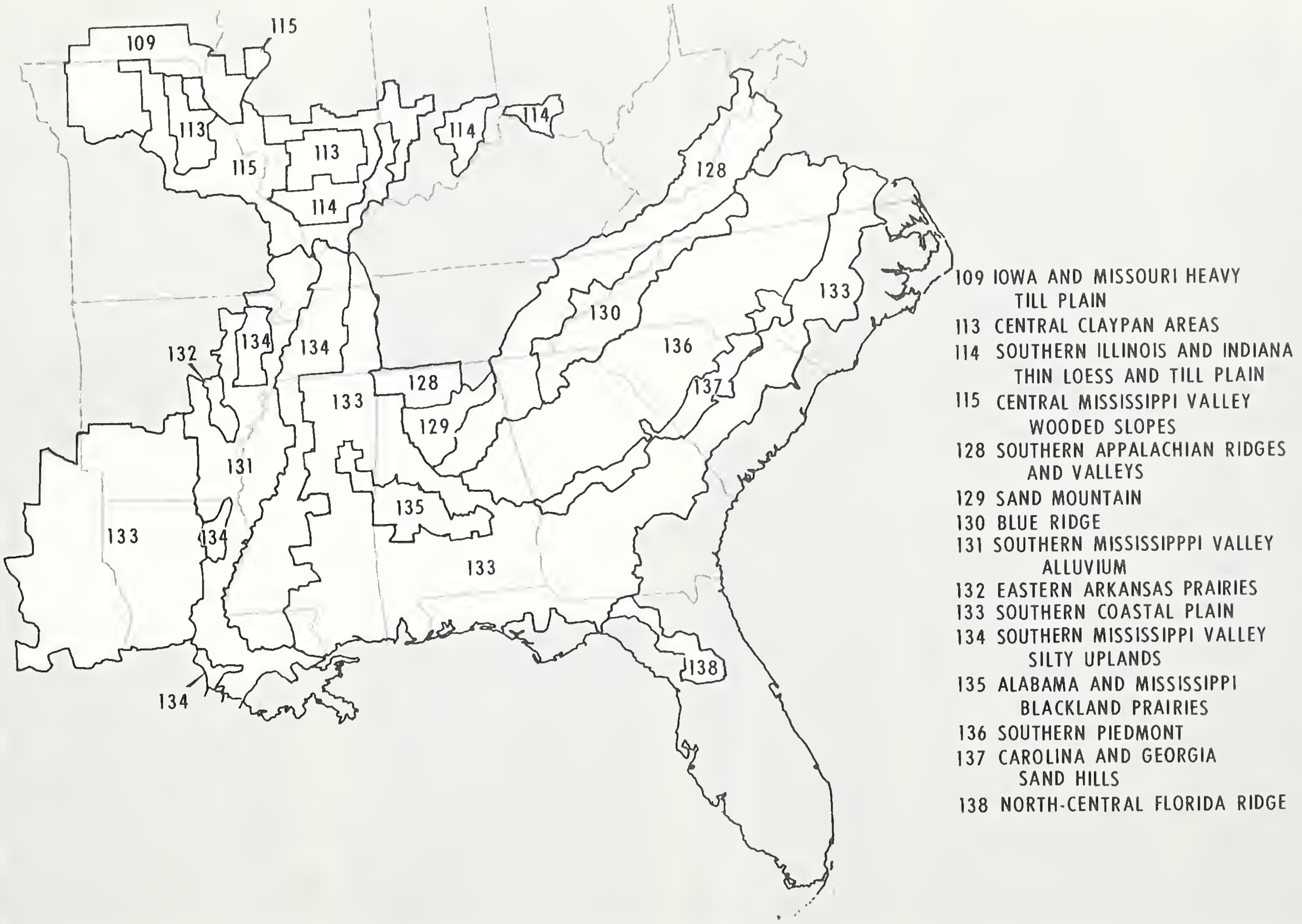
109
115
113
115
113
114
114
114
128
133
130
136
134
132
134
128
133
129
137
131
135
133
134
133
138
134
109 IOWA AND MISSOURI HEAVY TILL PLAIN
113 CENTRAL CLAYPAN AREAS
114 SOUTHERN ILLINOIS AND INDIANA THIN LOESS AND TILL PLAIN
115 CENTRAL MISSISSIPPI VALLEY WOODED SLOPES
128 SOUTHERN APPALACHIAN RIDGES AND VALLEYS
129 SAND MOUNTAIN
130 BLUE RIDGE
131 SOUTHERN MISSISSIPPPI VALLEY ALLUVIUM
132 EASTERN ARKANSAS PRAIRIES
133 SOUTHERN COASTAL PLAIN
134 SOUTHERN MISSISSIPPI VALLEY SILTY UPLANDS
135 ALABAMA AND MISSISSIPPI BLACKLAND PRAIRIES
136 SOUTHERN PIEDMONT
137 CAROLINA AND GEORGIA SAND HILLS
138 NORTH-CENTRAL FLORIDA RIDGE

Figure 1

Table 2.--Cropland and pasture-range acreage by State and region, 1959 and 1964

State and region	Cropland		Pasture-range	
	1959	1964	1959	1964
	1,000 acres			
Maine	1,078	894	133	98
New Hampshire	306	254	56	47
Vermont	984	878	521	406
Massachusetts	445	348	90	73
Rhode Island	55	45	10	7
Connecticut	351	288	111	98
New York	7,121	6,470	2,466	2,302
New Jersey	892	776	82	84
Pennsylvania	6,595	6,043	1,546	1,519
Delaware	496	500	20	12
Maryland	1,951	1,866	357	341
Northeast	20,274	18,362	5,392	4,987
Michigan	9,957	9,455	693	577
Wisconsin	12,250	12,043	1,984	1,845
Minnesota	21,930	22,243	2,170	2,118
Lake States	44,137	43,741	4,847	4,540
Ohio	12,255	11,864	2,351	2,177
Indiana	13,660	13,317	1,136	1,102
Illinois	23,960	23,868	1,886	1,746
Iowa	26,402	26,356	3,337	3,248
Missouri	18,170	17,960	5,411	5,835
Corn Belt	94,447	93,365	14,121	14,108
North Dakota	27,707	27,446	11,155	12,988
South Dakota	19,165	18,707	24,065	25,432
Nebraska	22,828	22,100	22,847	23,731
Kansas	29,624	29,421	17,913	18,524
Northern Plains	99,324	97,674	75,980	80,675
Virginia	4,427	4,010	2,551	2,568
West Virginia	1,551	1,227	1,686	1,605
North Carolina	6,416	5,782	1,040	1,165
Kentucky	9,927	9,364	1,628	1,824
Tennessee	8,499	7,855	1,485	1,808
Appalachian	30,820	28,238	8,390	8,970

Continued

Table 2.--Cropland and pasture-range acreage by State and Region, 1959 and 1964--Continued

State and region	Cropland		Pasture-range	
	1959	1964	1959	1964
	1,000 acres			
South Carolina	4,035	3,520	447	480
Georgia	7,458	6,368	1,384	1,802
Florida	3,401	3,581	4,130	4,306
Alabama	6,028	5,119	2,236	2,555
Southeast	20,922	18,588	8,197	9,143
Mississippi	7,093	6,565	3,161	3,717
Arkansas	8,436	8,525	1,622	2,373
Louisiana	4,907	4,864	1,690	2,004
Delta States	20,436	19,954	6,473	8,094
Oklahoma	14,044	13,011	16,270	18,449
Texas	35,599	34,269	91,886	95,581
Southern Plains	49,643	47,280	108,156	114,030
Montana	15,078	15,388	45,471	47,377
Idaho	5,784	5,878	7,074	7,434
Wyoming	2,738	2,766	32,368	32,937
Colorado	11,033	10,740	24,647	25,063
New Mexico	2,292	2,271	39,414	41,189
Arizona	1,586	1,589	30,710	31,935
Utah	2,008	2,070	9,250	9,661
Nevada	787	774	9,504	9,441
Mountain	41,306	41,476	198,438	205,037
Washington	7,910	8,064	6,125	6,741
Oregon	5,380	5,282	11,482	11,577
California	12,966	11,815	17,181	20,450
Pacific	26,256	25,161	34,788	38,768
Alaska	24	23	524	1,752
Hawaii	500	370	917	1,203
Caribbean area	---	---	---	---
Other	524	393	1,441	2,955
Total	448,089	434,232	466,223	491,307

Source: 1959 and 1964 Census of Agriculture, various tables.

For these reasons, the study area is limited to parts of the lower Mississippi Valley and the Southeast, because these areas seemed to have the most potential cropland.

LAND CLASSIFICATION

Even though the land resource criteria in the study area are uniform as to soils, types of farming, and physiographic characteristics, a further classification of land was made according to productivity or quality differences. The eight land capability classes developed by the Soil Conservation Service 9/ were selected as a general quality index for land suitable for cultivation, pasture, range, forest, or other uses.

Risks of soil damage or limitations to land use increase progressively from class I through class VIII. Soils in the first four classes can be cultivated, but soils in classes V-VIII generally cannot. Classes V, VI, and VII are used for pasture, forests, or orchards, while class VIII is suitable only for recreation, wildlife, and other nonagricultural purposes. The capability classes are based primarily on slope. They are further divided into subclasses to account for hazards to production such as erosion, water problems, climatic factors, and underlying soil conditions. Subclass symbols are:

e--risk of erosion,
w--wetness, drainage, or overflow,
s--limitations within the rooting zone, such as shallow zones or stones, and
c--climate limitation.

The Conservation Needs Inventory reports both inventory and noninventory acreages which are summarized on Federal, State, and county levels by class and subclass. Inventory acreage represents most land used for agriculture, while noninventory acreage includes all other land. Data for inventory acreage were obtained through statistical sampling techniques carried out for each county. Noninventory acreage consists of Federal noncropland, urban areas larger than 10 acres, and ponds and lakes of 2 to 40 acres.

This study is concerned with inventory land, which amounts to 1,438 million acres and was divided into four use categories (table 3). If the land capability classification system is applied to inventory acreage, about 95 percent of cropland and 40 percent of land in pasture, forest, and other use falls in classes I-IV. The new cropland would come from this 40 percent (396.2 million acres). This acreage represents a practical

---

9/ For a detailed description of land capability classes and subclasses, see: A.A. Klingebiel and P.H. Montgomery, Land Capability Classification, U.S. Dept. Agr., Agr. Handb. No. 210, 21 pp., 1961. Even though the land capability classes were developed for other purposes and there is variation in crop yields for the same land class in different areas, this classification system is still the best index of quality currently available. One disadvantage of using land capability classes is that the spatial distribution of land in any one class is highly irregular. Thus, it is not convenient to locate land of one class and subclass--for example, class IIe land--on a county or area map. The land will most likely occur in small tracts over a wide area. The soil maps included in county soil surveys are probably the most convenient source of the spatial distribution of land by capability class and subclass.

Table 3.--Land in inventory, by kind of use for selected capability class ranges, United States, 1967

Land use	Land capability classes				
	I-III	IV	I-IV	V-VIII	Total
	1,000 acres				
Pasture	57,767	19,231	76,998	24,742	101,740
Range	59,342	40,904	100,246	279,893	380,139
Total	117,109	60,135	177,244	304,635	481,879
Forest:					
Commercial	119,509	60,643	180,152	218,081	398,233
Noncommercial	6,067	4,077	10,144	53,940	64,084
Total	125,576	64,720	190,296	272,021	462,317
Other land:					
In farms	13,786	2,622	16,408	11,442	27,850
Not in farms	9,055	3,225	12,280	16,086	28,366
Total	22,841	5,847	28,688	27,528	56,216
Total land in inventory, excluding cropland	265,526	130,702	396,228	604,184	1,000,412
Cropland	365,243	49,739	414,982	22,601	437,583
Total land in inventory	630,769	180,441	811,210	626,785	1,437,995

physical upper limit on land available in the Nation for new cropland development. Thus, it would be physically possible to nearly double present cropland acreage.

The amount of this land within the areas selected for study is 98.7 million acres. This report shows the amount of this acreage that could be profitably converted to cropland at 1970 prices and costs, assuming no Government restrictions or other impediments to its development, such as unwillingness of farm operators to develop small tracts, limited availability, or other uses for capital.

METHOD OF ANALYSIS

The outlook for cropland development is assumed to depend primarily upon expected levels of crop prices, production costs, and land conversion costs. These three factors are analyzed within a budgeting framework. Budgets were analyzed to determine the minimum price that must be received for the most profitable crop for development into cropland to be renumerative. These minimum prices assure enough revenue to pay total costs, including land conversion costs.

Minimum prices were computed [10] for crops grown on each capability class and subclass of land for the major resource areas studied. Minimum prices were compared with 1970 farm prices to determine if undeveloped land in any one capability class and subclass for an area could be economically converted to cropland.

The expected costs and returns from crop production are based on budgets prepared by the Economic Research Service's Aggregate Production Analysis Team, [11] modified to fit the objective of this study. Crop yields used in the budgets were adjusted to reflect differences in land quality as measured by capability class and subclass. Averages of yields that could be obtained by average management were computed for each set of counties within a land resource area.

For example, the yield for cotton on class IIe land in a resource area was computed by recording each yield and the corresponding cotton acreage for class IIe land from the county soil surveys. Then a weighted average was obtained by multiplying yield times acreage to obtain production, summing the counties to get total production, and dividing by total acreage. In this example, class IIe land refers to the set of soils in class II that are subject to erosion without erosion control measures. In general, class II soils are productive, with undulating to slightly rolling topography, and are suitable for continuous cultivation when recommended conservation measures are followed.

Modifications to budgets mentioned above included recomputation of production costs that vary with crop yields to reflect yields on new land, inclusion of a management cost, and the addition of land conversion costs. The estimated management cost of $5 per acre [12] was included so that the budgets would reflect total costs.

Land clearing costs were obtained from farmers, land clearing contractors, and professional agricultural workers in the study area. Land is usually cleared on a per acre or per hour contract basis by a local contractor who uses a crawler tractor equipped with a special V-shaped blade. [13] Trees and brush are sheared off slightly below ground level.

---

[10] Calculations proceeded as follows: (1) Total costs of production per acre, including land conversion costs, were determined; and (2) total costs were divided by yield per acre. The result is the minimum price.

[11] The Aggregate Production Analysis Team uses a systems model to predict production of the major U.S. crops and output adjustments in response to Government policy actions. The budgets are in U.S. Dept. Agr. ERS-458, and ERS-461, Selected U.S. Crop Budgets: Yields, Inputs, and Variable Costs, vols. I, II, and V, 1971.

[12] Data collected by the Farm Financial Management Group, ERS, indicate a $5 per acre cost for management of farms in the study area.

[13] See C.M. Stokes and J.H. Yeager, Cost of Clearing Land, Ala. Agr. Expt. Sta. Cir. No. 133, 1959, or the booklet, Land Clearing, published by the Caterpillar Tractor Co., for a detailed description of equipment and methods used to clear land for cultivation.

Another crawler tractor, fitted with a raking blade, piles the cut trees into windrows and stirs and repiles them as they are burned.[14] The remaining small pieces or chunks are picked up by hand or by a special rake attached to a farm tractor. The land must be left clean of sticks and chunks, or these pieces will inevitably cause breakdowns in farm equipment, such as combines.

Construction of drainage ditches, where required, is done either with a dragline or with a crawler tractor, depending upon the circumstances. Not all land that is cleared requires drainage, but most wetland, indicated by a "w" in the land capability subclass, does; for example, IIIw land is likely to need drainage. The final operation performed by the clearing contractor is to disk the land with a heavy disk plow pulled by a crawler tractor. This operation chews up the tops of the stumps so they will rot, and breaks the ground.

Land clearing costs vary with location, and depend upon the type of soil (clay or sand), kind and size of tree cover, general characteristics of the terrain (flat or hilly), amount of drainage required, and to a lesser extent, labor costs. The clearing costs used in the study are averages for the areas included in the budgets, and range from $94 to $115 per acre.

Interest was charged for the capital invested in land conversion, and these costs were included in the budgets. Several combinations of interest rates and time periods were used, but the starting point was an interest rate of 7 percent and an infinite planning horizon. For the 20-year and other fixed-period planning horizons, the initial capital investment was amortized, and this cost was also included.

The analysis was limited to major field crops, such as corn, cotton, soybeans, rice, and wheat. Because such crops are not grown in all areas, a production restriction was imposed as a crop selection criterion: A resource area must have produced the equivalent of at least 5 percent of a State's total production of a crop before it could be selected as a possible enterprise for the area, unless the potential for production of the crop seemed to be important for the area.

CROPLAND FROM WOODLAND

The amount of new cropland that could be profitably developed by clearing woodlands in the study area could range from 24.4 to 37.2 million acres, depending upon whether land considered marginal at 1970 farm prices for field crops was cleared or left in woods. Currently, cropland in this area amounts to 48.8 million acres. New cropland could increase the supply 50 to 76 percent. The combination of crops that would be most profitable at 1970 farm prices (see table 4 for prices) and their corre-.

---

[14] It was common practice to burn felled trees rather than sell the logs. A few farmers contacted sold timber, but most did not. Several reasons were given for not selling, such as lack of a market for logs, or at least lack of information on where to sell logs, poor quality timber, insufficient time to log and clear the land before the next planting season, and the tendency of clearing contractors to charge more to clear cutover land than wooded land. See William L. Smiley, Our Forests--A Vanishing Resource, The Delta Farm Press 28 (10): 36 and following pages, Mar. 11, 1971.

Table 4.--Average prices received by farmers for selected commodities, United States, 1970

Crop	Unit	Price
		Dollars
Corn	Bushel	1.29
Cotton (lint)	Pound	.22
Cottonseed	Ton	56.50
Grain sorghum	Hundredweight	2.02
Rice	do.	5.19
Soybeans	Bushel	2.86
Wheat	do.	1.45

Source: U.S. Department of Agriculture, Statistical Reporting Service, Agricultural Prices, Prl (11-70), Nov. 15, 1970, p. 4.

sponding acreages on new cropland would be: 194,900 bales of cotton on 151,200 acres, 11,280 million pounds of rice on 3.8 million acres, and either 7.5 million bushels of corn on 110,200 acres and 453.2 million bushels of soybeans on 20.3 million acres, or 18.7 million bushels of corn on 370,100 acres and 592.7 million bushels of soybeans on 32.9 million acres, depending on whether marginal land is included.

Table 5 shows the maximum acreages that could be cleared from woods and planted to crops for each capability class and subclass, and the range in minimum crop prices for the most profitable crops for which land clearing would pay.

The most profitable crops for each resource area were identified by comparing minimum prices for each crop with the 1970 farm price and yield per acre. The most profitable crop--that with the largest return per acre above costs--was calculated for each capability class and subclass in each land resource area studied. The most profitable crop's minimum price for each land capability class is underlined in table 6. The table also contains crop yields per acre and the quantity of woodland available for clearing. Thus, if the relationship among farm prices changes, the data in the table can be used to determine a new set of most profitable crops and a new quantity of cropland that could be profitably developed. Examples of the budgets used to calculate the minimum prices for the crops are in the appendix.

In many cases, the minimum prices shown in table 6 for the most profitable crops are well below the farm prices shown in table 4. Hence, it would be profitable to clear the entire acreage of woodland for most capability classes and subclasses and put it in crop production. Minimum prices of alternative crops that could be produced also are generally below farm prices. A parcel of land that could be profitably cleared and planted to one of several alternative crops probably would be cleared sooner than one that would have only a single profitable crop, especially if the return from that crop is relatively low. For purposes of discus-

Table 5.--Quantity of potential cropland from woodland, minimum prices for specified crops in selected areas, and production, by land capability class 1/

Item and unit	Land capability class and subclass										Total
	I	IIe	IIw	IIs	IIIe	IIIw	IIIs	IVe	IVw	IVs	
Quantity of woodland cleared and planted to:											
Cotton (acres)	149,750	---	---	1,470	---	---	---	---	---	---	151,220
Rice (acres)	---	---	579,356	---	---	3,242,052	---	---	---	---	3,821,408
Soybeans (acres)	676,049	6,402,269	4,773,449	1,166,786	8,116,322	5,205,890	73,868	685,809	5,774,169	10,812	32,885,423
Corn (acres)	110,168	---	259,957	---	---	---	---	---	---	---	370,125
Total (acres)	935,967	6,402,269	5,612,762	1,168,256	8,116,322	8,447,942	73,868	685,809	5,774,169	10,812	37,228,176
Range in minimum prices for:											
Cotton (cents per lb.)	18-21	---	---	21	---	---	---	---	---	---	18-21
Rice (dols. per cwt.)	---	---	3.11	---	---	4.04	---	---	---	---	3.11-4.04
Soybeans (dols. per bu.)	1.29-1.84	1.42-2.15	1.47-2.04	1.42-2.40	1.98-2.71	1.73-2.40	1.58-2.27	2.42-2.47	2.31-2.71	183-2.64	1.29-2.71
Corn (dols. per bu.)	.78	---	1.25	---	---	---	---	---	---	---	.78-1.25
Total production of:											
Cotton (bales)	193,230	---	---	1,690	---	---	---	---	---	---	194,920
Rice (cwt.)	---	---	22,015,528	---	---	90,777,456	---	---	---	---	112,792,984
Soybeans (bu.)	16,365,263	127,271,339	106,620,312	20,021,755	126,416,479	94,764,958	1,475,651	10,499,542	89,057,159	204,100	592,696,558
Corn (bu.)	7,491,424	---	11,178,151	---	---	---	---	---	---	---	18,669,575

1/ Assuming a 7-percent interest rate and an infinite time horizon (no repayment of investment).

Table 6.--Minimum prices and yields for specified crops and quantities of woodland available for conversion to cropland, by land capability class, State, and land resource area [1]

Item and unit	Land capability class and subclass									
	I	IIe	IIw	IIs	IIIe	IIIw	IIIs	IVe	IVw	IVs
Mo. areas 109, 113, & 115:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.60	1.53	1.53	---	2.14	2.03	2.27	2.42	---	1.83
Wheat (dols. per bu.)	1.44	1.79	1.63	---	1.88	2.22	2.37	2.37	---	7.02
Corn (dols. per bu.)	.78	.92	1.11	---	1.11	1.24	1.47	1.66	---	1.71
Quantity of land available (acres)	110,168	45,777	245,036	---	398,907	127,070	26,815	473,402	---	8,384
Yield per acre (bu.) for:										
Soybeans	23	24	24	---	17	18	16	15	---	20
Wheat	25	20	22	---	19	16	15	15	---	5
Corn	68	57	47	---	47	42	35	31	---	30
Ill. areas 113, 114, & 115:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.29	1.42	1.47	1.42	1.98	1.73	2.09	2.47	2.64	2.64
Wheat (dols. per bu.)	1.09	1.32	1.27	1.37	1.59	1.47	1.66	1.82	2.73	2.39
Corn (dols. per bu.)	.75	.97	.88	.94	1.14	1.06	1.05	1.33	1.95	1.89
Quantity of land available (acres)	102,017	188,413	255,364	11,553	165,942	273,937	4,172	212,407	1,887	1,047
Yield per acre (bu.) for:										
Soybeans	31	28	27	28	20	23	19	16	15	15
Wheat	35	29	30	28	24	26	23	21	14	16
Corn	83	64	71	66	54	58	59	46	31	32
Ark., Miss., & La. area 131:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.23	1.65	1.05	1.58	2.31	2.16	1.58	---	2.31	2.31
Wheat (dols. per bu.)	1.26	1.40	1.45	---	---	1.72	---	---	---	2.04
Corn (dols. per bu.)	1.18	1.49	1.20	1.98	2.44	2.54	2.54	---	---	2.27
Cotton (cents per lb.)	18	22	18	27	33	42	37	---	---	38
Rice (dols. per cwt.)	---	---	3.11	5.15	---	4.04	4.87	---	4.87	---
Quantity of land available (acres)	78,090	303,297	579,356	11,862	316,922	3,242,052	18,920	---	452,207	1,381
Yield per acre for:										
Soybeans (bu.)	29	21	34	22	15	16	22	---	15	15
Wheat (bu.)	34	30	29	---	---	24	---	---	---	20
Corn (bu.)	55	43	54	31	25	24	24	---	---	27
Cotton (lb.)	706	554	675	445	350	269	307	---	---	300
Rice (cwt.)	---	---	38	21	---	28	22	---	22	---
Ark., Miss., & La. area 134:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.84	1.90	1.84	2.04	2.53	2.04	2.21	[2]3.57	2.31	---
Corn (dols. per bu.)	.96	1.20	1.11	.95	1.46	1.37	1.53	2.26	1.82	---
Cotton (cents per lb.)	20	24	23	21	27	29	31	36	25	---
Quantity of land available (acres)	38,319	387,129	1,047,830	1,470	608,825	561,767	23,961	368,878	349,232	---
Yield per acre for:										
Soybeans (bu.)	28	27	28	25	20	25	23	14	22	---
Corn (bu.)	71	56	61	72	44	47	42	28	35	---
Cotton (lbs.)	611	505	530	575	441	397	372	315	475	---
Ala., Fla., & Miss. areas 133, 135, 136, and 138:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.78	2.15	2.04	2.40	2.71	2.40	[2]2.91	[2]2.91	2.71	[2]3.67
Wheat (dols. per bu.)	1.63	2.01	1.92	2.11	2.48	2.48	2.80	3.50	2.11	3.23
Corn (dols. per bu.)	.97	1.15	.99	1.34	1.47	1.38	1.86	1.86	1.67	2.21
Cotton (cents per lb.)	23	26	27	29	33	37	45	38	37	52
Quantity of land available (acres)	283,977	1,955,814	1,537,662	242,687	2,185,815	1,500,829	1,985,451	2,074,475	3,376,775	825,424
Yield per acre for:										
Soybeans (bu.)	23	19	20	17	15	17	14	14	15	11
Wheat (bu.)	26	21	22	20	17	17	15	12	20	13
Corn (bu.)	49	41	48	35	32	34	25	25	28	21
Cotton (lbs.)	482	414	407	366	324	283	226	277	280	194
Ga., N.C., & S.C. areas 133, 136, and 137:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.78	2.15	2.04	2.40	2.71	2.40	[2]2.91	[2]2.91	2.71	[2]3.67
Wheat (dols. per bu.)	1.85	2.23	1.85	2.64	2.64	2.48	2.64	3.50	2.12	3.50
Corn (dols. per bu.)	1.02	1.26	1.02	1.50	1.56	1.37	1.94	2.11	1.86	2.26
Cotton (cents per lb.)	26	29	28	32	35	37	48	41	38	55
Quantity of land available (acres)	290,055	3,521,839	1,687,607	900,684	4,439,911	2,742,287	1,324,978	4,742,025	1,594,068	1,737,868
Yield per acre for:										
Soybeans (bu.)	23	19	20	17	15	17	14	14	15	11
Wheat (bu.)	23	19	23	16	16	17	16	12	20	12
Corn (bu.)	46	37	46	31	29	34	24	22	25	20
Cotton (lb.)	440	386	396	337	312	288	218	257	280	186
Ala. and Ga. areas 128, 129, & 130:										
Minimum price for planting:										
Corn (dols. per bu.)	1.14	[2]1.44	1.25	---	[2]1.77	[2]1.61	---	[2]2.29	[2]2.11	---
Cotton (cents per lb.)	21	24	26	---	28	37	---	34	---	---
Quantity of land available (acres)	33,341	386,066	259,957	---	719,669	277,499	---	819,443	113,090	---
Yield per acre for:										
Corn (bu.)	47	37	43	---	30	33	---	23	25	---
Cotton (lb.)	542	449	404	---	380	278	---	298	---	---

---

[1] Minimum prices for the most profitable crop for each land capability class are underscored. A 7-percent interest rate and an infinite time horizon (no repayment of investment) are assumed.

[2] Minimum prices for crops in this capability class for this area are higher than 1970 farm prices.

sion, land in the latter class has been termed marginal. Thus, undeveloped Illinois land in classes IVw and IVs is marginal (table 6). The minimum prices for wheat and corn on IVw and IVs land are well above farm prices, while that for soybeans is just below. Other marginal land is in capability class IIIe in land resource area 134 and classes IIIe and IVw in areas 133, 135, 136, 137, and 138 (table 6 and fig. 1).

The total amount of new cropland that could be obtained from woodland at the assumed prices and costs was estimated by summing the quantities of land available for each land capability class and subclass. The estimate includes all land where the total cost of production of the most profitable crop (the minimum price underlined in table 6) was below the 1970 market price of that crop. Thus, 37.2 million acres of new cropland could be profitably obtained from woodland if farmers chose to do so.

For most crops, the additional production from new cropland would not be sufficient to significantly affect the crop supply functions and price. However, rice and soybeans are exceptions. If 3.8 million acres were cleared and put in rice and 32.9 million acres in soybeans, the added production for the given demand would surely cause the supply functions for these crops to shift to the right enough to reduce the price significantly. Thus, for continued clearing of land to be planted to these crops, demand would have to increase or the supply from other areas would have to decrease. If not, crop prices would most likely drop to the point that some of the land indicated for clearing in the study would stay in woods.

CROPLAND FROM PASTURELAND

In addition to woodland, large acreages of pasture in the areas studied could be converted to cropland. The cost of such conversion is the cost of plowing up grass plus the income foregone from the land when it was used as pasture. Unlike most woodland that is converted to cropland, 15/ pasture produces a yearly income to the landowner. There probably are large differences in income from pasture, depending upon owner's use, carrying capacity, type of forage, and location. However, reliable measures of income from pasture are difficult if not impossible to obtain. Therefore, the income measure chosen for this study was the State average cash rent paid per acre for pastureland in 1969. 16/ Thus, cash rent per acre and the interest on investment in converting pasture to cropland were entered as land conversion costs in the budgets for each crop analyzed.

Minimum prices were calculated from the budgets as explained before, and compared with 1970 farm prices to determine the profitability of conversion. The most profitable crop's minimum price for each capability class and subclass for each area is underlined in table 7. If all the

---

15/ As mentioned earlier, most trees were cut, piled, and burned rather than sold for timber, although some undoubtedly have an opportunity cost (ignored here).

16/ See table 16 in Farm Tenure and Cash Rents in the United States, U.S. Dept. Agr., Agr. Econ. Rpt. No. 190, Aug. 1970, p. 26. A continued increase in the demand for beef could raise the opportunity cost of pasture above that reported here.

Table 7.--Minimum prices and yields for specified crops and quantities of pastureland available for conversion to cropland, by land capability class, State, and land resource area 1/

Item and unit	Land capability class and subclass									
	I	IIe	IIw	IIs	IIIe	IIIw	IIIs	IVe	IVw	IVs
Mo. areas 109, 113, and 115:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.67	1.60	1.60	---	2.24	2.12	2.38	2.54	---	1.91
Wheat (dols. per bu.)	1.51	1.87	1.71	---	1.97	2.33	2.48	2.48	---	7.37
Corn (dols. per bu.)	.80	.95	1.14	---	1.14	1.28	1.52	1.72	---	1.77
Quantity of land available (acres)	58,211	190,571	183,361	---	1,342,540	88,267	13,296	742,712	---	977
Yield per acre (bu.) for:										
Soybeans	23	24	24	---	17	18	16	15	---	20
Wheat	25	20	22	---	19	16	15	15	---	5
Corn	68	57	47	---	47	42	35	31	---	30
Ill. areas 113, 114, and 115:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.43	1.59	1.64	1.59	2.21	1.93	2.33	2.76	2/2.94	---
Wheat (dols. per bu.)	1.22	1.48	7.43	1.53	1.78	1.65	1.86	2.04	3.06	---
Corn (dols. per bu.)	.81	1.04	.94	1.01	1.22	1.14	1.12	1.43	2.10	---
Quantity of land available (acres)	74,075	278,705	142,223	9,219	243,301	110,984	2,296	281,963	4,945	---
Yield per acre (bu.) for:										
Soybeans	31	28	27	28	20	23	19	16	15	---
Wheat	35	29	30	28	24	26	23	21	14	---
Corn	83	64	71	66	54	58	59	46	31	---
Ark., Miss., and La. area 131:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.28	1.72	1.09	1.65	2.41	2.26	1.65	---	2.41	2.41
Wheat (dols. per bu.)	1.30	1.46	1.50	---	---	1.79	---	---	---	2.12
Corn (dols. per bu.)	1.21	1.53	1.23	2.03	2.50	2.61	2.61	---	---	2.32
Cotton (cents per lb.)	18	22	19	27	33	43	38	---	---	38
Rice (dols. per cwt.)	---	---	3.15	5.22	---	4.10	4.94	---	4.94	---
Quantity of land available (acres)	187,848	124,008	252,752	5,714	184,234	629,034	11,359	---	27,797	6,195
Yield per acre for:										
Soybeans (bu.)	29	21	34	22	15	16	22	---	15	15
Wheat (bu.)	34	30	29	---	---	24	---	---	---	20
Corn (bu.)	55	43	54	31	25	24	24	---	---	27
Cotton (lb.)	706	554	675	445	350	269	307	---	---	300
Rice (cwt.)	---	---	38	21	---	28	22	---	22	---
Ark., Miss., and La. area 134:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.89	1.96	1.89	---	2.61	2.11	2.28	2/3.69	2.38	---
Corn (dols. per bu.)	.98	1.23	1.13	---	1.50	1.41	1.57	2.32	1.87	---
Cotton (cents per lb.)	20	24	23	---	27	30	32	37	25	---
Quantity of land available (acres)	37,850	277,938	457,071	---	352,807	141,710	6,131	244,775	36,833	---
Yield per acre for:										
Soybeans (bu.)	28	27	28	---	20	25	23	14	22	---
Corn (bu.)	71	56	61	---	44	47	42	28	35	---
Cotton (lb.)	611	505	530	---	441	397	372	315	475	---
Ala., Fla., and Miss. areas 133, 135, 136 and 138:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.82	2.20	2.09	2.46	2.79	2.46	2/2.98	2/2.98	2.79	2/3.77
Wheat (dols. per bu.)	1.68	2.07	1.97	2.17	2.54	2.54	2.88	3.58	2.17	3.31
Corn (dols. per bu.)	1.00	1.18	1.02	1.38	1.50	1.42	1.91	1.91	1.71	2.26
Cotton (cents per lb.)	23	27	27	30	33	37	46	38	38	52
Quantity of land available (acres)	115,133	801,483	593,302	59,847	760,003	499,338	382,361	571,270	532,600	120,511
Yield per acre for:										
Soybeans (bu.)	23	19	20	17	15	17	14	14	15	11
Wheat (bu.)	26	21	22	20	17	17	15	12	20	13
Corn (bu.)	49	41	48	35	32	34	25	25	28	21
Cotton (lb.)	482	414	407	366	324	283	226	277	280	194
Ga., N.C., and S.C. areas 133, 136, and 137:										
Minimum price for planting:										
Soybeans (dols. per bu.)	1.99	2.41	2.29	2.69	2/3.04	2.69	2/3.26	2/3.26	2/3.04	2/4.12
Wheat (dols. per bu.)	2.06	2.49	2.06	2.94	2.94	2.77	2.94	3.91	2.36	3.91
Corn (dols. per bu.)	1.13	1.40	1.13	1.66	1.78	1.52	2.14	2.33	2.05	2.56
Cotton (cents per lb.)	27	30	30	34	36	39	50	43	40	58
Quantity of land available (acres)	87,989	1,191,215	231,496	167,980	988,774	259,569	158,157	641,326	77,356	87,895
Yield per acre for:										
Soybeans (bu.)	23	19	20	17	15	17	14	14	15	11
Wheat (bu.)	23	19	23	16	16	17	16	12	20	12
Corn (bu.)	46	37	46	31	29	34	24	22	25	20
Cotton (lb.)	440	386	396	337	312	288	218	257	280	186
Ala. and Ga. areas 128, 129 and 130:										
Minimum price for planting:										
Corn (dols. per bu.)	1.20	2/1.51	2/1.30	---	2/1.85	2/1.69	---	2/2.40	2/2.21	---
Cotton (cents per lb.)	21	25	27	---	29	38	---	35	---	---
Quantity of land available (acres)	35,531	281,419	158,302	---	293,708	85,956	---	179,668	41,233	---
Yield per acre for:										
Corn (bu.)	47	37	43	---	30	33	---	23	25	---
Cotton (lb.)	542	449	404	---	380	278	---	298	---	---

1/ Minimum prices for the most profitable crop for each capability class and subclass are underscored. A 7-percent interest rate and an infinite planning horizon (no repayment of interest) are assumed.

2/ Minimum prices for crops in this capability class and subclass for this area are higher than 1970 farm prices.

land in each selected area where conversion of pastureland to cropland is profitable were planted to the most profitable crop, there would be 203.7 million bushels of soybeans on 10.6 million acres, 4.0 million bushels of corn on 58,000 acres, 27.2 million hundredweight of rice on 882,000 acres, and 350,000 bales of cotton on 261,000 acres. Of the 11.8 million acres of pastureland that could be converted to cropland, class IVe in Missouri and Illinois; class IIIe in area 134; classes IIIe and IVw in areas 133, 135, 136, and 138; and classes IIs and IIIw in areas 133, 136, and 137 could be considered marginal because of the relatively high minimum prices required for soybeans, the most profitable crop (table 7). This marginal pastureland represents 3.1 million acres, or 49.4 million bushels of soybeans. These production figures were obtained from table 7 by multiplying the acreage of land in each capability class mentioned above by the yield per acre.

Thus, about one-third as much pastureland as woodland could be used for cropland, with an interest rate of 7 percent on land conversion costs and an infinite planning horizon (no repayment of investment).

EFFECTS OF SELECTED INTEREST RATES ON PROFITABILITY OF DEVELOPING NEW CROPLAND

Interest rates of 5, 7, and 9 percent and an infinite planning horizon (no repayment of investment) were used to compute annual charges for land development costs. The effect of these interest rate alternatives was to change the level of the minimum prices by a constant percentage (table 8). Thus, for each 1-point change in the interest rate, the minimum prices in each land capability class for rice, cotton, corn, soybeans, and wheat would change by 1, 1.3, 2.5, 3, and 3.5 percent, respectively. While there is a constant increment in each crop's minimum prices in each class (table 8), each crop would change at a different rate, causing changes in the relative prices needed to make development profitable. Comparisons of the most profitable crops (those with the minimum price underlined in table 7) at each interest rate indicate that these interest rates had a minimal affect on relative profitability among the crop enterprises. In only two cases did the most profitable crop change as interest rates changed.

The most important effect of varying interest rates is on the quantity of land that could be profitably converted to cropland. For example, because minimum prices are 20 to 40 cents per bushel less for soybeans at a 5-percent rate than at 9 percent, more marginal land, such as that in classes III and IV, could be converted at the lower interest rate. Thus, as interest rates increase, the quantity of new land developed decreases, if other things are equal. With the three interest rates used here, the quantity of new land developed from woodland would decrease from 47.2 million acres to 37.1 to 25.3 million acres as interest rates increase. Similar declines would be expected in the quantity of new land obtained from pasture.

EFFECTS OF REPAYMENT PERIOD ON PROFITABILITY OF DEVELOPING NEW CROPLAND

The previous discussion was based upon an infinite planning horizon for the landowner. However, the planning (repayment) period affects the minimum prices for crops, so minimum prices were computed for 5-, 10-, and 20-year planning periods, assuming an interest rate of 7 percent (table 9).

Table 8.--Minimum prices for converting woodland to cropland for production of specified crops, by land capability class, State, and land resource areas, assuming 3 interest rates and an infinite planning horizon 1/

Item	Land capability class and subclass									
	I	IIe	IIw	IIs	IIIe	IIIw	IIIs	IVe	IVw	IVs
	Dollars									
Mo. areas 109, 113, and 115:										
Minimum prices for planting:										
Soybeans at 5%	1.49	1.43	1.43	---	2.00	1.89	2.12	2.26	---	1.71
Soybeans at 7%	1.60	1.53	1.53	---	2.14	2.03	2.27	2.42	---	1.83
Soybeans at 9%	1.70	1.63	1.63	---	2.28	2.16	2.42	2.58	---	1.95
Wheat at 5%	1.35	1.67	1.52	---	1.76	2.08	2.21	2.21	---	6.56
Wheat at 7%	1.44	1.79	1.63	---	1.88	2.22	2.37	2.37	---	7.02
Wheat at 9%	1.55	1.93	1.76	---	2.03	2.40	2.56	2.56	---	7.58
Corn at 5%	.74	.87	1.05	---	1.05	1.17	1.40	1.58	---	1.63
Corn at 7%	.78	.92	1.11	---	1.11	1.24	1.47	1.66	---	1.71
Corn at 9%	.82	.97	1.16	---	1.16	1.30	1.55	1.74	---	1.80
Ill. areas 113, 114, and 115:										
Minimum prices for planting:										
Soybeans at 5%	1.21	1.34	1.39	1.34	1.87	1.63	1.96	2.33	2.48	2.48
Soybeans at 7%	1.29	1.42	1.47	1.42	1.98	1.73	2.09	2.47	2.64	2.64
Soybeans at 9%	1.37	1.52	1.57	1.52	2.12	1.84	2.23	2.64	2.82	2.82
Wheat at 5%	1.03	1.24	1.20	1.28	1.50	1.38	1.56	1.71	2.56	2.24
Wheat at 7%	1.09	1.32	1.27	1.37	1.59	1.47	1.66	1.82	2.73	2.39
Wheat at 9%	1.18	1.42	1.37	1.47	1.72	1.58	1.79	1.96	2.94	2.58
Corn at 5%	.72	.93	.84	.90	1.09	1.02	1.00	1.27	1.87	1.81
Corn at 7%	.75	.97	.88	.94	1.14	1.06	1.05	1.33	1.95	1.89
Corn at 9%	.79	1.01	.91	.98	1.19	1.11	1.09	1.39	2.04	1.98
Ark., Miss., and La. area 131:										
Minimum prices for planting:										
Soybeans at 5%	1.16	1.55	.99	1.48	2.17	2.04	1.48	---	2.17	2.17
Soybeans at 7%	1.23	1.65	1.05	1.58	2.31	2.16	1.58	---	2.31	2.31
Soybeans at 9%	1.30	1.74	1.11	1.67	2.44	2.29	1.67	---	2.44	2.44
Wheat at 5%	1.19	1.34	1.38	---	---	1.64	---	---	---	1.94
Wheat at 7%	1.26	1.40	1.45	---	---	1.72	---	---	---	2.04
Wheat at 9%	1.32	1.47	1.52	---	---	1.81	---	---	---	2.14
Corn at 5%	1.14	1.44	1.16	1.91	2.35	2.45	2.45	---	---	2.18
Corn at 7%	1.18	1.49	1.20	1.98	2.44	2.54	2.54	---	---	2.27
Corn at 9%	1.22	1.55	1.24	2.05	2.53	2.63	2.63	---	---	2.35
Cotton at 5%	.18	.21	.18	.26	.32	.41	.36	---	---	.37
Cotton at 7%	.18	.22	.18	.27	.33	.42	.37	---	---	.38
Cotton at 9%	.18	.22	.19	.27	.34	.43	.38	---	---	.39
Rice at 5%	---	---	3.04	5.02	---	3.95	4.76	---	4.76	---
Rice at 7%	---	---	3.11	5.15	---	4.04	4.87	---	4.87	---
Rice at 9%	---	---	3.18	5.27	---	4.14	4.99	---	4.99	---
Ark., Miss., and La. area 134:										
Minimum prices for planting:										
Soybeans at 5%	1.76	1.82	1.76	1.96	2.42	1.96	2.12	2/3.42	2.21	---
Soybeans at 7%	1.84	1.90	1.84	2.04	2.53	2.04	2.21	2/3.57	2.31	---
Soybeans at 9%	1.91	1.98	1.91	2.13	2.63	2.13	2.30	2/3.72	2.40	---
Corn at 5%	.93	1.16	1.07	.92	1.41	1.33	1.48	2.18	1.76	---
Corn at 7%	.96	1.20	1.11	.95	1.46	1.37	1.53	2.26	1.82	---
Corn at 9%	.99	1.24	1.14	.98	1.51	1.42	1.58	2.34	1.88	---
Cotton at 5%	.20	.23	.22	.21	.26	.29	.30	.35	.24	---
Cotton at 7%	.20	.24	.23	.21	.27	.29	.31	.36	.25	---
Cotton at 9%	.20	.24	.23	.22	.27	.30	.32	.37	.25	---
Ala., Fla., and Miss. areas 133, 135, 136, and 138:										
Minimum prices for planting:										
Soybeans at 5%	1.68	2.03	1.92	2.26	2.56	2.26	2.74	2.74	2.56	2/3.46
Soybeans at 7%	1.78	2.15	2.04	2.40	2.71	2.40	2/2.91	2/2.91	2.71	2/3.67
Soybeans at 9%	1.88	2.27	2.16	2.53	2/2.87	2.53	2/3.07	2/3.07	2/2.87	2/3.88
Wheat at 5%	1.55	1.91	1.82	2.00	2.34	2.34	2.65	3.30	2.00	3.05
Wheat at 7%	1.63	2.01	1.92	2.11	2.48	2.48	2.80	3.50	2.11	3.23
Wheat at 9%	1.72	2.12	2.03	2.23	2.61	2.61	2.96	3.69	2.23	3.41
Corn at 5%	.93	1.10	.94	1.28	1.39	1.31	1.77	1.77	1.59	2.10
Corn at 7%	.97	1.15	.99	1.34	1.47	1.38	1.86	1.86	1.67	2.21
Corn at 9%	1.02	1.21	1.04	1.41	1.54	1.45	1.96	1.96	1.75	2.32
Cotton at 5%	.23	.26	.26	.29	.32	.36	.44	.36	.36	.50
Cotton at 7%	.23	.26	.27	.29	.33	.37	.45	.38	.37	.52
Cotton at 9%	.24	.27	.28	.30	.34	.38	.46	.39	.38	.53
Ca., N.C., and S.C. areas 133, 136, and 137:										
Minimum prices for planting:										
Soybeans at 5%	1.68	2.03	1.92	2.26	2.56	2.26	2.74	2.74	2.56	2/3.46
Soybeans at 7%	1.78	2.15	2.04	2.40	2.71	2.40	2/2.91	2/2.91	2.71	2/3.67
Soybeans at 9%	1.88	2.27	2.16	2.53	2/2.87	2.53	2/3.07	2/3.07	2/2.87	2/3.88
Wheat at 5%	1.75	2.11	1.75	2.49	2.49	2.35	2.49	3.31	2.00	3.31
Wheat at 7%	1.85	2.23	1.85	2.64	2.64	2.48	2.64	3.50	2.12	3.50
Wheat at 9%	1.95	2.35	1.95	2.78	2.78	2.62	2.78	3.69	2.23	3.69
Corn at 5%	.97	1.20	.97	1.43	1.53	1.30	1.84	2.00	1.77	2.20
Corn at 7%	1.02	1.26	1.02	1.50	1.56	1.37	1.94	2.11	1.86	2.26
Corn at 9%	1.07	1.33	1.07	1.58	1.69	1.44	2.03	2.22	1.95	---
Cotton at 5%	.25	.28	.28	.32	.34	.36	.46	.40	.37	.54
Cotton at 7%	.26	.29	.28	.32	.35	.37	.48	.41	.38	.55
Cotton at 9%	.26	.30	.29	.33	.36	.38	.49	.42	.39	.57
Ala. and Ca. areas 128, 129, and 130:										
Minimum price for planting:										
Corn at 5%	1.09	2/1.38	1.19	---	2/1.69	2/1.54	---	2/2.19	2/2.02	---
Corn at 7%	1.14	2/1.44	1.25	---	2/1.77	2/1.61	---	2/2.29	2/2.11	---
Corn at 9%	1.19	2/1.50	2/1.30	---	2/1.84	2/1.68	---	2/2.39	2/2.20	---
Cotton at 5%	.20	.24	.26	---	.27	.36	---	.34	---	---
Cotton at 7%	.21	.24	.26	---	.28	.37	---	.34	---	---
Cotton at 9%	.21	.25	.27	---	.29	.38	---	.35	---	---

1/ Minimum prices for the most profitable crop for each capability class and subclass are underscored.
2/ Minimum prices for crops at this interest rate in this land capability class are higher than 1970 farm prices.

Table 9.--Minimum prices for converting woodland to cropland for production of specified crops by land capability class, State, and land resource areas, assuming an interest rate of 7 percent and planning horizons of 5, 10, and 20 years

Area, crop, and period	Land capability class and subclass									
	I	IIe	IIw	IIs	IIIe	IIIw	IIIs	IVe	IVw	IVs
	Dollars									
Mo. areas 109, 113, and 115:										
Minimum prices for planting:										
Soybeans, 5 years	2.47	2.37	2.37	---	3.32	3.14	3.52	3.75	---	2.83
Soybeans, 10 years	1.96	1.88	1.88	---	2.63	2.49	2.79	2.98	---	2.24
Soybeans, 20 yrs	1.72	1.65	1.65	---	2.31	2.18	2.45	2.61	---	1.97
Wheat, 5 yrs	2.24	2.79	2.54	---	2.93	3.47	3.70	3.70	---	11.02
Wheat, 10 yrs	1.77	2.20	2.01	---	2.32	2.74	2.92	2.92	---	8.69
Wheat, 20 yrs	1.55	1.93	1.76	---	2.03	2.40	2.56	2.56	---	7.58
Corn, 5 yrs	1.07	1.27	1.53	---	1.53	1.71	2.05	2.31	---	2.38
Corn, 10 yrs	.90	1.07	1.28	---	1.28	1.43	1.71	1.93	---	1.99
Corn, 20 yrs	.82	.97	1.17	---	1.17	1.30	1.56	1.75	---	1.81
Ill. areas 113, 114, and 115:										
Minimum price for planting:										
Soybeans, 5 yrs	1.93	2.14	2.22	2.14	2.98	2.60	3.14	3.72	3.97	3.97
Soybeans, 10 yrs	1.56	1.72	1.78	1.72	2.40	2.09	2.52	2.99	3.19	3.19
Soybeans, 20 yrs	1.38	1.52	1.58	1.52	2.12	1.85	2.23	2.65	2.82	2.82
Wheat, 5 yrs	1.66	2.01	1.94	2.08	2.43	2.24	2.53	2.77	4.16	3.64
Wheat, 10 yrs	1.33	1.60	1.55	1.66	1.94	1.79	2.02	2.22	3.32	2.91
Wheat, 20 yrs	1.17	1.42	1.37	1.46	1.71	1.58	1.78	1.95	2.93	2.56
Corn, 5 yrs	1.00	1.28	1.16	1.24	1.51	1.41	1.38	1.76	2.60	2.52
Corn, 10 yrs	.86	1.10	.99	1.06	1.29	1.21	1.19	1.51	2.22	2.15
Corn, 20 yrs	.79	1.01	.92	.98	1.19	1.11	1.09	1.39	2.04	1.98
Ark., Miss., and La. area 131:										
Minimum price for planting:										
Soybeans, 5 yrs	1.79	2.43	1.53	2.32	3.40	3.18	2.32	---	3.40	3.40
Soybeans, 10 yrs	1.46	1.97	1.25	1.88	2.76	2.59	1.88	---	2.76	2.76
Soybeans, 20 yrs	1.30	1.76	1.11	1.68	2.46	2.30	1.68	---	2.46	2.46
Wheat, 5 yrs	1.74	1.95	2.01	---	---	2.40	---	---	---	2.86
Wheat, 10 yrs	1.46	1.63	1.68	---	---	2.00	---	---	---	2.38
Wheat, 20 yrs	1.32	1.48	1.53	---	---	1.82	---	---	---	2.15
Corn, 5 yrs	1.48	1.88	1.51	2.51	3.10	3.22	3.22	---	---	2.87
Corn, 10 yrs	1.31	1.65	1.33	2.20	2.71	2.82	2.82	---	---	2.52
Corn, 20 yrs	1.22	1.55	1.25	2.06	2.53	2.64	2.64	---	---	2.35
Cotton, 5 yrs	.20	.25	.21	.30	.38	.48	.42	---	---	.43
Cotton, 10 yrs	.19	.23	.20	.28	.35	.44	.39	---	---	.40
Cotton, 20 yrs	.18	.22	.19	.27	.34	.43	.38	---	---	.39
Rice, 5 yrs	---	---	3.54	5.92	---	4.63	5.60	---	5.60	---
Rice, 10 yrs	---	---	3.29	5.47	---	4.29	5.17	---	5.17	---
Rice, 20 yrs	---	---	3.17	5.25	---	4.13	4.97	---	4.97	---
Ark., Miss., and La. area 134:										
Minimum prices for planting:										
Soybeans, 5 yrs	2.42	2.50	2.42	2.70	3.35	2.70	2.92	4.74	3.05	---
Soybeans, 10 yrs	2.08	2.15	2.08	2.32	2.87	2.32	2.51	4.06	2.62	---
Soybeans, 20 yrs	1.92	1.98	1.92	2.13	2.64	2.13	2.31	3.73	2.41	---
Corn, 5 yrs	1.19	1.49	1.37	1.18	1.83	1.72	1.92	2.84	2.29	---
Corn, 10 yrs	1.06	1.32	1.22	1.04	1.62	1.52	1.69	2.50	2.01	---
Corn, 20 yrs	.99	1.24	1.14	.98	1.51	1.42	1.58	2.34	1.89	---
Cotton, 5 yrs	.23	.27	.26	.24	.30	.33	.35	.41	.28	---
Cotton, 10 yrs	.21	.25	.24	.22	.28	.31	.33	.38	.26	---
Cotton, 20 yrs	.20	.24	.23	.22	.27	.30	.32	.37	.25	---
Ala., Fla., and Miss. areas 133, 135, 136, and 138:										
Minimum prices for planting:										
Soybeans, 5 yrs	2.52	3.05	2.90	3.41	3.86	3.41	4.14	4.14	3.86	5.23
Soybeans, 10 yrs	2.09	2.52	2.40	2.82	3.19	2.82	3.42	3.42	3.19	4.32
Soybeans, 20 yrs	1.88	2.27	2.16	2.54	2.88	2.54	3.08	3.08	2.88	3.89
Wheat, 5 yrs	2.30	2.83	2.71	2.97	3.49	3.49	3.95	4.93	2.97	4.55
Wheat, 10 yrs	1.91	2.36	2.25	2.47	2.90	2.90	3.28	4.09	2.47	3.78
Wheat, 20 yrs	1.73	2.13	2.03	2.23	2.62	2.62	2.96	3.70	2.23	3.41
Corn, 5 yrs	1.32	1.57	1.35	1.84	2.00	1.89	2.55	2.55	2.28	3.03
Corn, 10 yrs	1.12	1.33	1.14	1.55	1.69	1.59	2.15	2.15	1.93	2.55
Corn, 20 yrs	1.02	1.21	1.04	1.41	1.54	1.45	1.96	1.96	1.37	2.33
Cotton, 5 yrs	.27	.31	.31	.34	.38	.43	.53	.44	.43	.61
Cotton, 10 yrs	.25	.28	.29	.31	.35	.39	.48	.40	.40	.56
Cotton, 20 yrs	.24	.27	.27	.30	.33	.38	.46	.38	.38	.53
Ga., N.C., and S.C. areas 133, 136, and 137:										
Minimum prices for planting:										
Soybeans, 5 yrs	2.52	3.05	2.90	3.41	3.86	3.41	4.14	4.14	3.86	5.23
Soybeans, 10 yrs	2.09	2.52	2.40	2.82	3.19	2.82	3.42	3.42	3.19	4.32
Soybeans, 20 yrs	1.88	2.27	2.16	2.54	2.88	2.54	3.08	3.08	2.88	3.89
Wheat, 5 yrs	2.60	3.13	2.60	3.71	3.71	3.50	3.71	4.93	2.98	4.93
Wheat, 10 yrs	2.16	2.60	2.16	3.08	3.08	2.90	3.00	4.10	2.48	4.10
Wheat, 20 yrs	1.95	2.35	1.95	2.79	2.79	2.62	2.79	3.70	2.24	3.70
Corn, 5 yrs	1.40	1.73	1.40	2.06	2.20	1.88	2.65	2.89	2.55	3.18
Corn, 10 yrs	1.18	1.46	1.18	1.73	1.85	1.58	2.23	2.44	2.15	2.68
Corn, 20 yrs	1.07	1.33	1.07	1.58	1.69	1.44	2.04	2.22	1.96	2.44
Cotton, 5 yrs	.30	.33	.33	.38	.40	.43	.56	.48	.44	.65
Cotton, 10 yrs	.27	.31	.30	.35	.37	.40	.51	.44	.41	.59
Cotton, 20 yrs	.26	.30	.29	.33	.36	.38	.49	.42	.39	.57
Ala. and Ga. areas 128, 129, and 130:										
Minimum prices for planting:										
Corn, 5 yrs	1.51	1.91	1.65	---	2.34	2.13	---	3.04	2.80	---
Corn, 10 yrs	1.30	1.63	1.41	---	2.01	1.83	---	2.60	2.40	---
Corn, 20 yrs	1.20	1.51	1.30	---	1.85	1.68	---	2.40	2.21	---
Cotton, 5 yrs	.24	.28	.31	---	.32	.43	---	.40	---	---
Cotton, 10 yrs	.22	.26	.28	---	.30	.39	---	.37	---	---
Cotton, 20 yrs	.21	.25	.27	---	.28	.38	---	.35	---	---

The minimum prices computed for the 9-percent rate and an infinite planning period (table 9) are roughly analogous to those obtained for a 7-percent rate and a 20-year planning period (table 9). If the length of the planning period were shortened to 10 or 5 years, minimum prices would increase rapidly, so that they would be about 1-1/2 times as great for a 5-year period as they would be for an infinite time horizon. Thus, the minimum prices for a 5-year period are high enough that land in capability classes I and II is about the only land that could be profitably converted to cropland. If farmers had to clear woodland with funds borrowed at 7 percent for 5 years, chances are that very little land would be cleared. If, on the other hand, the repayment period could be extended to 20 years at 7 percent, about 25 million acres of land could be cleared profitably.

APPENDIX. REPRESENTATIVE BUDGETS USED IN MINIMUM PRICE DETERMINATIONS

A budget was prepared for each crop in each land resource region analyzed. To do so, a basic budget was selected from those prepared by the Aggregate Production Analysis Team of the Farm Production Economics Division for estimating production changes for each geographic area.

The costs in the basic budget were used as a starting point. For example, appendix tables 1 and 3 are the basic budgets for soybeans for two production regions. These budgets specify the variable costs of production, but were modified to include a management cost for growing soybeans in these areas. To calculate minimum prices, costs from the basic budgets were augmented by including costs that depended upon yield per acre and upon conversion of land to cropland for each of the three interest rates used and four planning periods shown in appendix tables 2 and 4.

For example, the total cost per acre for converting class I woodland to cropland and producing soybeans in land resource areas 109, 113, and 115 in Missouri, assuming an interest rate of 5 percent and an infinite planning horizon, is $34.30 (app. table 2). When divided by the yield per acre of 23 bushels, a minimum price of $1.49 per bushel is obtained. Thus, if the farm price of soybeans is expected to be above $1.49 per bushel, one would expect that the Missouri woodland could be profitably cleared and planted to soybeans, if the assumptions about the interest rate and so forth were reasonable. The $34.30 is obtained by adding trucking and storage costs, which depend upon yield, to the costs specified in the basic budget, as well as including the interest charges on operating capital and investment capital for clearing woodland and converting the land to crop production. If the interest rate were set at a different level, a different total cost per acre and minimum price for soybeans would obtain.

Thus, in effect, there are several budgets in appendix table 2 for each land capability class and subclass--one for each interest rate and planning horizon as well as for the type of land converted to cropland.

When comparing the budgets in appendix tables 2 and 4, note that the land conversion costs differ, as well as the variable costs and yields. However, the same land conversion costs were used for each budget prepared within a land resource area. They were changed only among regions, and only then when evidence indicated a real difference in land conversion costs.

Appendix table 1.--Basic budget for 1 acre of soybeans, areas 109, 113, and 115, Missouri

Item	Amount
	Dollars
Variable cash costs:	
Preharvest:	
Labor: 3.65 hours @ $1.38	5.04
Lime: 0.2420 ton @ $4.00	.97
Seed	2.88
Fertilizer	1.03
Tractor	2.81
Equipment	1.19
Insecticides	.50
Herbicides	3.22
Insurance	.07
Clean 55% of seed	.04
Subtotal	17.75
Harvest:	
Labor: 0.82 hr. @ $1.38	1.13
Tractor	.50
Equipment	.58
Combine	2.10
Subtotal	4.31
Total	22.06
Management	5.00
Total costs	27.06

Appendix table 2.--Calculation of minimum prices for 1 acre of soybeans, by land capability class and areas 109, 113, and 115, Missouri

Item and unit	Land capability class and subclass							
	I	IIe	IIw	IIIe	IIIw	IIIs	IVe	IVs
Yield per acre (bu.)	23	24	24	17	18	16	15	20
Total costs from basic budget (dol.)	27.06	27.06	27.06	27.06	27.06	27.06	27.06	27.06
Costs that depend upon yield:								
Trucking (96.4% of yield x $.04)	.89	.93	.93	.66	.69	.62	.58	.77
Storage (20% of yield x $.06)	.28	.29	.29	.20	.22	.19	.18	.24
Total costs excluding interest (dol.)	28.23	28.28	28.28	27.92	27.97	27.87	27.82	28.07
5-percent interest rate:								
(1) Woodland conversion costs:								
Infinite planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.32	.32	.32	.32	.32	.32	.32	.32
Land conversion cost ($100/acre)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Pick up trash, labor ($15/acre)	.75	.75	.75	.75	.75	.75	.75	.75
Total cost per acre (dol.)	34.30	34.35	34.35	33.99	34.04	33.94	33.89	34.14
Total cost per bu. (minimum price) (dol.)	1.49	1.43	1.43	2.00	1.89	2.12	2.26	1.71
(2) Pastureland conversion costs:								
Infinite planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.32	.32	.32	.32	.32	.32	.32	.32
Land conversion cost ($2.48/acre)	.12	.12	.12	.12	.12	.12	.12	.12
Cash rent foregone from pasture (dol.)	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
Total cost per acre (dol.)	38.27	38.32	38.32	37.96	38.01	37.91	37.86	38.11
Total cost per bu. (minimum price) (dol.)	1.66	1.60	1.60	2.23	2.11	2.37	2.52	1.91
7-percent interest rate:								
(1) Woodland conversion costs:								
a) Infinite planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.44	.44	.44	.44	.44	.44	.44	.44
Land conversion cost ($100/acre)	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Pick up trash, labor ($15/acre)	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
Total cost per acre (dol.)	36.72	36.77	36.77	36.41	36.46	36.36	36.31	36.56
Total cost per bu. (minimum price) (dol.)	1.60	1.53	1.53	2.14	2.03	2.27	2.42	1.83
b) 20-yr. planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.44	.44	.44	.44	.44	.44	.44	.44
Land conversion & labor cost ($115/acre)	10.86	10.86	10.86	10.86	10.86	10.86	10.86	10.86
Total cost per acre (dol.)	39.53	39.58	39.58	39.22	39.27	39.17	39.12	39.37
Total cost per bu. (minimum price) (dol.)	1.72	1.65	1.65	2.31	2.18	2.45	2.61	1.97
c) 10-yr. planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.44	.44	.44	.44	.44	.44	.44	.44
Land conversion and labor cost ($115/acre)	16.37	16.37	16.37	16.37	16.37	16.37	16.37	16.37
Total cost per acre (dol.)	45.04	45.09	45.09	44.73	44.78	44.68	44.63	44.88
Total cost per bu. (minimum price) (dol.)	1.96	1.88	1.88	2.63	2.49	2.79	2.98	2.24
d) 5-yr. planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.44	.44	.44	.44	.44	.44	.44	.44
Land conversion & labor cost ($115/acre)	28.05	28.05	28.05	28.05	28.05	28.05	28.05	28.05
Total cost per acre (dol.)	56.72	56.77	56.77	56.41	56.46	56.36	56.31	56.56
Total cost per bu. (minimum price) (dol.)	2.47	2.37	2.37	3.32	3.14	3.52	3.75	2.83
(2) Pastureland conversion costs:								
Infinite planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.44	.44	.44	.44	.44	.44	.44	.44
Land conversion cost ($2.48/acre)	.17	.17	.17	.17	.17	.17	.17	.17
Cash rent foregone from pasture (dol.)	9.60	9.60	9.60	9.60	9.60	9.60	9.60	9.60
Total cost per acre (dol.)	38.44	38.49	38.49	38.13	38.18	38.08	38.03	38.28
Total cost per bu. (minimum price) (dol.)	1.67	1.60	1.60	2.24	2.12	2.38	2.54	1.91
9-percent interest rate:								
Woodland conversion costs:								
Infinite planning horizon:								
Interest on cash expenses ($12.71 for 6 months)	.57	.57	.57	.57	.57	.57	.57	.57
Land conversion & labor cost ($115/acre)	10.35	10.35	10.35	10.35	10.35	10.35	10.35	10.35
Total cost per acre (dol.)	39.15	39.20	39.20	38.84	38.89	38.79	38.74	38.99
Total cost per bu. (minimum price) (dol.)	1.70	1.63	1.63	2.28	2.16	2.42	2.58	1.95

Appendix table 3.--Basic budget for 1 acre of soybeans, area 134, Mississippi and Louisiana

Item	Amount
	Dollars
Variable cash costs:	
Preharvest:	
Labor, 5.43 hours @ $1.40	7.60
Seed, 1.0 bu. @ $4.00	4.00
Fertilizer, 2.0 cwt. @ $3.10	6.20
Tractor	3.51
Equipment	1.22
Herbicides, preemerge	4.50
Herbicides, postemerge	1.25
Subtotal	28.28
Harvest:	
Combining, custom hired	8.00
Subtotal	8.00
Total	36.28
Management	5.00
Total costs	41.28

Appendix Table 4.--Calculation of minimum prices for 1 acre of soybeans, by land capability class and area 134, Arkansas, Mississippi and Louisiana

Item and unit	Land capability class and subclass								
	I	IIe	IIw	IIs	IIIe	IIIw	IIIs	IVe	IVw
Yield per acre, (bu.)	28	27	28	25	20	25	23	14	22
Total costs from basic budget (dol.)	41.28	41.28	41.28	41.28	41.28	41.28	41.28	41.28	41.28
Costs that depend upon yield:									
Trucking (yield x $.10)	2.80	2.70	2.80	2.50	2.00	2.50	2.30	1.40	2.20
Total cost excluding interest (dol.)	44.08	43.98	44.08	43.78	43.28	43.78	43.58	42.68	43.48
5-percent interest rate:									
Woodland conversion costs:									
Infinite planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.52	.52	.52	.52	.52	.52	.52	.52	.52
Land conversion cost ($85/acre)	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Pick up trash, labor ($9/acre)	.45	.45	.45	.45	.45	.45	.45	.45	.45
Total cost per acre (dol.)	49.30	49.20	49.30	49.00	48.50	49.00	48.80	47.90	48.70
Total cost per bu. (minimum price) (dol.)	1.76	1.82	1.76	1.96	2.42	1.96	2.12	3.42	2.21
7-percent interest rate:									
(1) Woodland conversion costs:									
a) Infinite planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.72	.72	.72	.72	.72	.72	.72	.72	.72
Land conversion cost ($85/acre)	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
Pick up trash, labor ($9/acre)	.63	.63	.63	.63	.63	.63	.63	.63	.63
Total cost per acre (dol.)	51.38	51.28	51.38	51.08	50.58	51.08	50.88	49.98	50.78
Total cost per bu. (minimum price) (dol.)	1.84	1.90	1.84	2.04	2.53	2.04	2.21	3.57	2.31
b) 20-yr. planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.72	.72	.72	.72	.72	.72	.72	.72	.72
Land conversion & labor cost ($94/acre)	8.87	8.87	8.87	8.87	8.87	8.87	8.87	8.87	8.87
Total cost per acre (dol.)	53.67	53.57	53.67	53.37	52.87	53.37	53.17	52.27	53.07
Total cost per bu. (minimum price) (dol.)	1.92	1.98	1.92	2.13	2.64	2.13	2.31	3.73	2.41
c) 10-yr. planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.72	.72	.72	.72	.72	.72	.72	.72	.72
Land conversion & labor costs ($94/acre)	13.38	13.38	13.38	13.38	13.38	13.38	13.38	13.38	13.38
Total cost per acre (dol.)	58.18	58.08	58.18	57.88	57.38	57.88	57.68	56.78	57.58
Total cost per bu. (minimum price) (dol.)	2.08	2.15	2.08	2.32	2.87	2.32	2.51	4.06	2.62
d) 5-yr. planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.72	.72	.72	.72	.72	.72	.72	.72	.72
Land conversion & labor costs ($95/acre)	22.93	22.93	22.93	22.93	22.93	22.93	22.93	22.93	22.93
Total cost per acre (dol.)	67.73	67.63	67.73	67.43	66.93	67.43	67.23	66.33	67.13
Total cost per bu. (minimum price) (dol.)	2.42	2.50	2.42	2.70	3.35	2.70	2.92	4.74	3.05
(2) Pastureland conversion costs:									
Infinite planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.72	.72	.72	.72	.72	.72	.72	.72	.72
Land conversion cost ($2.48/acre)	.17	.17	.17	.17	.17	.17	.17	.17	.17
Cash rent foregone from pasture (dol.)	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Total cost per acre (dol.)	52.97	52.87	52.97	52.67	52.17	52.67	52.47	51.57	52.37
Total cost per bu. (minimum price) (dol.)	1.89	1.96	1.89	2.11	2.61	2.11	2.28	3.69	2.38
9-percent interest rate:									
Woodland conversion costs:									
Infinite planning horizon:									
Interest on cash expenses ($20.68 for 6 months)	.93	.93	.93	.93	.93	.93	.93	.93	.93
Land conversion costs ($85/acre) (dol.)	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65	7.65
Pick up trash labor ($9/acre) (dol.)	.81	.81	.81	.81	.81	.81	.81	.81	.81
Total cost per acre (dol.)	53.47	53.37	53.47	53.17	52.67	53.17	52.97	52.07	52.87
Total cost per bu. (minimum price) (dol.)	1.91	1.98	1.91	2.13	2.63	2.13	2.30	3.72	2.40